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THE POTENTIAL CONTRIBUTION OF AVICULTURE TO CONSERVATION BREEDING OF ESTRILDID FINCHES

by Andy C. Birchenough and Stewart M. Evans

Introduction

Captive breeding may be the last resort for many species which are on the brink of extinction and whose natural habitat is no longer able to sustain them. It has been used successfully to maintain populations of several species, including the Bali Starling or Rothchild's Myna *Leucopsar rothschildi* (Taynton & Jeggo, 1988), Hawaiian Goose *Branta sandvicensis* (Black et al. 1991; Black, 1995), Californian Condor *Gymnogyps californianus* (Toone & Risser, 1988) and Mauritius Kestrel *Falco punctatus* (Jones et al. 1995). So far, the prime responsibility for maintaining breeding programmes has fallen on zoological gardens and/or specialist organisations, such as the Wildfowl and Wetlands Trust and the International Crane Foundation (Stewart, 1989). However, zoos and wildlife parks have insufficient staff, space and financial resources to cope with the huge range and number of species that are currently endangered, and which could benefit from captive breeding. Even with the enlightened approach to conservation that is now prevalent, the scope for captive breeding is limited. Tudge (1991) estimated that, if all of the world's zoos collaborated together, it should be possible to establish captive breeding programmes for no more than the 800 species of mammals that will require help in the next 200 years (see also Magin et al. 1994). This would be a commendable achievement, but it is put in perspective by the plight of just one other class of vertebrates, the birds. According to Collar et al. (1994), 1,029 of the 9,000 or so species of land birds are currently at risk, and a further 637 are near-threatened.

However, members of many amateur organisations also keep and breed animals in captivity, and several of them cater for species which are not normally given high priority in zoos. The UK-based Australian Finch Society (AFS) is one such organisation. It was founded in 1971 to cater for hobbyists who are interested in keeping and breeding Australian grassfinches, belonging to the family Estrildidae. There are 19 species (Immelmann, 1965) but, one

of them, the Zebra Finch *Taeniopygia guttata*, was excluded from the AFS remit from the outset because its interests were catered for by the Zebra Finch Society. However, the AFS subsequently decided to embrace the 11 species of Indo-Pacific and Pacific parrot finches *Erythrura* spp., which are also members of the Estrildidae (Ziswiler et al. 1972; Evans & Fidler, 1990). Their inclusion was justified because the range of one species, the Blue-faced Parrot Finch *Erythrura trichroa*, includes Cape York, on the north-east tip of Australia. There was an international trade in wild-trapped Australian grassfinches prior to the Australian Government's ban on the export of its native flora and fauna in 1960. Wild-caught birds have not been available since then. Some of the parrot finches are still trapped in the wild in Indonesia and the Philippines and available to aviculturists from these sources.

The AFS has some 500-600 members, most of whom are based in the UK. The AFS became interested in establishing conservation breeding programmes for species which are threatened in the wild and those which are endangered in captivity. It set-up the Rare and Difficult Species (RADS) scheme in 1995. Initially, four species were selected for inclusion in the scheme: the Gouldian Finch *E. gouldiae*, Bamboo Parrot Finch *E. hyperythra*, Pin-tailed Parrot Finch *E. prasina* and the Tri-colour Parrot Finch *E. tricolor*. It was expected to increase this number as the scheme progressed. A specialist group of eight to ten experienced breeders, with one of them acting as Group Manager, was formed for each of the selected species. The objective in each case was to set-up a viable breeding programme for the species and to develop and record husbandry techniques. Special attention was given to the use of studbooks (Olney, 1990). Each bird in the scheme was identified by a special RADS ring, provided by the AFS, and breeding records were collated centrally. They were kept on the Single Population Analysis and Records Keeping System (SPARKS), which has been adopted widely by zoos and wildlife parks. It enables the ancestry of individual birds to be traced, and inbreeding coefficients between potential mates calculated so that pairings between closely-related individuals can be avoided. Group managers were expected to direct exchanges of birds between breeders, in much the same way as happens in programmes operated by zoos. The AFS also recognised the importance of field work, although this was unlikely to be undertaken by many of its members. Nevertheless, it could be encouraged by, for example, support for scientific research to: (i) gain information about food, breeding and habitat requirements of wild birds in order to develop improved husbandry techniques for captive ones; and (ii) provide information on the general ecology of the species in order to assess their conservation status and develop plans for the management of wild populations.

It soon became clear that the original formula for RADS was too prescriptive. The procedure of record keeping, in particular, was unrealistic and too demanding for amateur aviculturists, whose main motive in joining the hobby was often in the pleasure derived from keeping captive birds. Another problem was that members of RADS groups were reluctant to exchange birds simply on the instructions of the Group Manager. Furthermore, a relatively small proportion of the AFS was involved in the scheme and it was seen by many members as being elitist.

The scheme was therefore revised in 1997 so that all members of the AFS could be involved. It was decided that all species within the AFS remit should be included in the new project, RADS PLUS, so that any member keeping them could be involved. Informal groups dedicated to particular species would be formed but centralised studbooks would not be kept. However, although the more flexible arrangement was expected to bring advantages, there were also disadvantages. For example, the lack of control of stock makes it more difficult to avoid inbreeding. It was argued that the way forward was to educate AFS members, and raise their awareness of bad avicultural practices, so that the AFS as a whole contributed to the conservation effort on a voluntary basis.

The object of the present paper is to assess the potential contribution that the AFS can make to the long-term conservation of estrildid finches within RADS PLUS and the changes in husbandry techniques that will be needed if its potential is to be achieved. It is based primarily on a questionnaire, which was sent to all members of the AFS as part of the RADS PLUS initiative, in order to census birds kept and bred by them in 1997 and 1998. This was needed to assess the status of species in captivity, and identify those species which are in need of conservation action either because of their status in captivity or in the wild. The census was also designed to identify some of the husbandry techniques, such as selecting for certain traits, and using Bengalese Finches *Lonchura striata* dom. as foster parents to rear young, which might be considered to be bad practice as far as conservation breeding is concerned.

Methods

Questionnaires were sent out to all members of the AFS in March 1998 and February 1999. Each was sent with a stamped addressed envelope for reply as means of encouraging a good response.

Members were asked to provide the following information:

1. The numbers of finches kept at the end of the previous year (December 31st), listing separately adult males, adult females and juveniles in two categories: (i) normals (i.e. the species as it normally occurs in the wild); and (ii) colour varieties that have arisen in captivity.

2. Details of the colour varieties kept (i.e. white-breasted Gouldian Finch, yellow Star Finch *Neochmia ruficauda*).
3. The numbers of finches bred (i.e. surviving until fledging) during the previous year.
4. The numbers of Bengalese Finches kept, and the numbers of Australian and parrot finches which were parent-reared or foster-reared by Bengalese Finches.
5. In the case of Gouldian Finches only, the numbers of normals and colour varieties which were parent-reared or foster-reared by Bengalese Finches.

Results

291 questionnaires were completed and returned for 1997 and 190 for 1998, representing 50.2% and 32.8% of the AFS membership respectively.

Fourteen of the 19 Australian grassfinches listed by Immelmann (1965) and eight out of the 11 parrot finches (Ziswiler et al. 1972) were kept by at least some members of the AFS in both 1997 and 1998. The Gouldian Finch was easily the most commonly kept species. It was included in more than 70% of the returns in both years (Table 1). There were more than 3,500 Gouldians in 1997 and 1998, averaging more than 20 of these finches per breeder. Large numbers of them were also bred in both years of the census.

The Longtail Finch *Poephila acuticauda*, Star Finch *N. ruficauda*, Bicheno *Taeniopygia bichenovii*, Diamond Firetail *Stagonopleura guttata*, Cherry Finch *N. modesta*, Chestnut-breasted Mannikin *Lonchura castaneothorax*, Parson's Finch *P. cincta* and Masked Finch *P. personata* of the Australian grassfinches, and the Red-headed Parrot Finch *E. psittacea*, Blue-faced Parrot Finch and Tri-coloured Parrot Finch, are also well-established in captivity. In each case, more than 10 breeders kept the species, more than 100 individuals of that species were owned by them and more than 50 birds were bred per year.

The status of other species in captivity is probably less secure. This applied to five Australian finches, the Crimson Finch *N. phaeton*, Painted Finch *Emblema picta*, Red-browed Finch *N. temporalis*, Yellow-rumped Mannikin *L. flavipryma* and Pictorella Mannikin *Heteromunia pectoralis*, and five parrot finches, the Pin-tailed, Bamboo, Peale's *E. pealii*, Katanglad *E. coloria* and Papuan *E. papuana*. They were kept by more than 10 breeders, who between them owned over 100 birds, and over 25 young were bred per year.

Each of the three naturally-occurring head colour morphs of the Gouldian Finch is kept in captivity, although the relative proportions in which they are kept by AFS members is different from those in which they occur in the wild. About 75% of individuals in the wild are black-headed, and 25% are red-headed; the yellow-headed morph is unusual (Evans et al. 1985, Evans & Fidler, 1986). Roughly one third of the captive population was red-headed

Table 1. The numbers of AFS members keeping finches, numbers kept by them and numbers bred in 1997 and 1998.

	Numbers of breeders		Numbers of finches kept		Numbers of finches bred	
	1997	1998	1997	1998	1997	1998
Australian Grassfinches						
Gouldian Finch	206	142	4868	3581	3432	2744
Longtail Finch	83	63	870	628	769	362
Star Finch	73	51	615	326	388	174
Bicheno	69	47	626	266	426	169
Diamond Firetail	55	36	335	235	211	130
Cherry Finch	54	32	414	190	403	96
Chestnut-breasted Mannikin	36	30	225	216	141	126
Parson's Finch	36	22	189	105	166	108
Masked Finch	25	13	193	110	139	58
Crimson Finch	8	8	33	27	6	4
Painted Finch	7	7	36	44	15	0
Red-browed Finch	10	4	37	27	10	9
Yellow-rumped Mannikin	7	4	20	13	5	0
Pictorella Mannikin	4	3	24	17	6	1
Parrot Finches						
Red-headed Parrot Finch	59	43	461	330	323	123
Blue-faced Parrot Finch	47	37	322	186	153	100
Tri-coloured Parrot Finch	44	25	354	205	11	96
Pin-tailed Parrot Finch	26	15	151	56	39	13
Bamboo Parrot Finch	18	11	88	65	20	23
Peale's Parrot Finch	8	5	66	49	11	19
Katanglad Parrot Finch	2	3	10	32	0	0
Papuan Parrot Finch	1	2	37	11	16	2

and more than 15% was yellow-headed (Table 2). The differences in wild and captive populations were significant in both 1997 and 1998 ($P < 0.001$ in both cases; Chi-square Test). Several colour varieties have arisen in captivity. They have been grouped together in Table 2 because there is inconsistency in the descriptive names given to them by breeders. It is clear, nevertheless, that a range of colour morphs have been established in the Gouldian Finch. The white-breasted form is commonly kept but a number of other morphs, affecting breast, wing and general body colouration, are now available. Roughly one third of Gouldian Finches in captivity in 1997 and 1998 expressed at least one of these colour mutations. There are also colour

varieties of other species. Some of them, especially those of the Long-tail Finch, Star Finch, Diamond Firetail, Parson's Finch and Red-headed Parrot Finch, are well-established in captivity.

Table 2. The occurrence of naturally-occurring colour morphs and colour varieties which have been established in captivity in stock kept by members of AFS.

	Colour variety	Numbers kept		Percent kept of total birds	
		1997	1998	1997	1998
Naturally-occurring morphs					
Australian Grassfinches					
Gouldian Finch	Black-headed	1111	734	47.7	48.3
	Red-headed	845	517	36.3	34.1
	Yellow-headed	375	269	16.1	17.6
Domestically established varieties					
Australian Grassfinches					
Gouldian Finch	Body colour	1318	1338	27.1	37.4
Long-tail Finch	Body colour	98	101	11.3	16.1
Star Finch	Body coloured/pied	148	121	24.1	37.1
Diamond Firetail	Body colour	69	69	4.9	10.6
Chestnut-breasted Mannikin	Body colour	11	23	10.6	13.3
Parson's Finch	Body colour	20	14	166	108
Crimson Finch	Body colour	2	2	6.1	7.4
Parrot Finches					
Red-headed Parrot Finch	Body colour/pied	58	93	12.6	28.2
Blue-faced Parrot Finch	Body colour	20	3	6.2	1.6

Table 3. The use of Bengalese finches as foster parents.

	1997	1998
Numbers of breeders keeping Bengalese Finches	137	102
Percent breeders keeping Bengalese Finches as a percent of total breeders	47.1	53.7
Mean number of Bengalese Finches kept per breeder	26.2	22.3
Number of breeders using Bengalese Finches as foster parents	124	82
Numbers of breeders using Bengalese Finches as foster parents as percent of those keeping them	90.5	80.4
Percent of wild-type (normal) Gouldian Finches foster-reared by Bengalese Finches	33.9	26.6
Percent of domestically-established colour varieties of the Gouldian Finch foster-reared by Bengalese Finches	54.5	53.9

Approximately half the AFS members kept Bengalese Finches, and most of them used these finches as foster parents for rearing Australian finches or parrot finches; more than 40% of the finches bred in 1997 and 1998 were reared by them (Table 3). At least in the case of the Gouldian Finch, there was the tendency for the more valuable (domestically-arising) colour varieties to be foster-reared than wild type (normal) birds; more than 50% of the Gouldian Finches of the various colour varieties were reared by Bengalese Finches, compared with less than 40% of wild-type birds.

Discussion

Amateur aviculture has the potential to make an enormous contribution to conservation breeding of birds, and therefore to the maintenance of bird biodiversity. Members of the AFS constitute a specialist, and numerically small section of the avicultural hobby, and yet they have the skills and commitment to maintain the large majority of Australian grassfinches in captivity. These species have been established without any recourse to wild-caught birds for more than 40 years, that is, since the Australian Government's 1960 ban on the export of indigenous flora and fauna. AFS members have been almost as successful with parrot finches, although several species are not yet fully established in captivity. Although the AFS restricts itself to two groups only of the Estrildidae, there is little doubt that, given the same commitment and a larger membership, it could establish possibly all of the 120 or so species in the family (Goodwin, 1982) in captivity. Interestingly, Australian aviculturists have been as successful as their European counterparts in breeding estrildids. They have established several of the Asian and African species, which were imported into their country before 1960, but became unavailable as wild-caught birds after that date (Evans & Fidler, 1990). It should be noted that estrildids are not normally kept in significant numbers in zoos, or even specialist bird gardens, so the contribution is in addition to existing conservation efforts. Furthermore, since the costs are borne by the hobby, they compare highly favourably with the huge costs of many professional conservation programmes (eg. Kleimann et al. 1991).

However, amateur aviculture is currently unfocused, as far as conservation breeding is concerned. Aviculturists keep and breed whichever species appeal to them. The information provided in the census presents an opportunity for them to decide to concentrate on species which are in need of attention because they are threatened in captivity and/or in the wild. Three of the species currently kept by AFS members are globally threatened: Gouldian Finch, Star Finch and Katanglad Parrot Finch (Collar et al. 1994). In addition, two species are near-threatened: the *Pictorella* Mannikin and Yellow-rumped Mannikin. The Gouldian Finch and Star Finch are both

secure in captivity, although captive populations of both of them have been 'corrupted' by colour mutants (see below). Conversely, there are few members of the AFS who keep the three remaining species, the Katanglad Parrot Finch, *Picrocella Mannikin* and Yellow-rumped Mannikin. Each of them was included in small numbers only in the census returns, and were bred infrequently. In fact, there were no breeding records at all of Katanglad Parrot Finches in either 1997 or 1998. There is a clear need to concentrate on these species, and groups are being established within the RADS PLUS to cater for them. A specialist group is also being formed to breed strains of wild-type Gouldian Finches, in which the various colour mutants will be selected out (P. Holland pers. comm.).

There are, nevertheless, three important respects in which the husbandry practices in the AFS differ from those practised in the conservation breeding programmes that are operated by zoos and wildlife gardens. Each of them need to be addressed if aviculture is to realise its potential in captive breeding.

The first concern is that most of the major zoo conservation breeding programmes depend heavily on detailed record keeping based on studbooks, computer analysis of kinship and mechanisms for identifying and exchanging unrelated birds, in order to avoid inbreeding and retain genetic diversity in the stock (Ballou & Lacy, 1995). Experiences in the AFS RADS Scheme suggest that this level of record-keeping is not feasible in an amateur hobby. However, the huge commitment of human resources in the professional programmes must also be a concern for them. In fact, less demanding, low intensity management techniques have been developed for species that are maintained in social groups or colonies and for which detailed pedigree data cannot therefore be collected (Burlingham-Johnson et al. 1994; Princee, 1995). These techniques are probably more appropriate for aviculture (and, due to lack of resources, possibly some zoos as well). They ensure that at least some attention is given to procedures which promote the maintenance of genetic diversity, such as outbreeding stock and ensuring that as many individuals as possible have the opportunity to reproduce.

The second concern is that aviculturists are artificially selecting for particular traits in their stock and this will eventually lead to the morphological, behavioural or physiological changes that have occurred in other domestic animals (Hafez, 1969). The result is that, like the domestic fowl and the canary, they come to bear little resemblance to their wild counterparts. The domestication process is still in its infancy in captive estrildids but is, nevertheless, occurring. The clearest example of artificial selection relates to the selective breeding for particular head colour morphs in the Gouldian Finch. Yellow-headed morphs are rare in the wild but have increased significantly in captivity, representing almost 20% of the Gouldian Finches included in the censuses for 1997 and 1998. There is also selection

for colour morphs which have arisen in captivity. Only one colour morph of the Gouldian Finch, the white-breasted form, had been established in captivity in the mid-1980s (Evans & Fidler, 1986) but several different colour varieties are now available. There are also morphs of the most of the Australian grassfinches and parrot finches that are well-established in captivity. Selective pressure for them is evidently high because the percentage numbers of colour morphs in the census returns for 1998 were higher than those for 1997 in eight of the nine species in which they were reported. There is some hybridisation between species. Immelmann (1965) lists many of those that have occurred between species of Australian grassfinches. They occur most frequently between closely-related species, and he cites a successful mating between the Gouldian Finch and the Blue-faced Parrot Finch as evidence that they are close relatives. Unfortunately, many of these hybrids are fertile and they can blur species distinctions if they are allowed to interbreed with the 'true' species. It is reported that this has happened in Australia where aviculturists have, since the 1960 import ban, maintained the three African cordon bleus : the Red-cheeked Cordon Bleu *Uraeginthus bengalus*, Blue-capped Cordon Bleu *U. cyanocephalus* and Blue-breasted Cordon Bleu *U. angolensis*. They have been interbred and it is said that almost all birds now have characteristics of at least two of the species.

The third concern relates to the widespread use of Bengalese Finches as foster parents. It is generally recognised that these foster parents have been invaluable in establishing estrildid species in captivity (M.E. Fidler pers. comm.). However, they are still used extensively and, as the census has shown in the case of the Gouldian Finch, they are used to increase production from valued birds. This is bad avicultural practice because it reduces the numbers of birds that are reproducing and contributing to the gene pool, and therefore the genetic diversity of the captive population. It also encourages the rate at which mutant genes can spread through the population. The white-breasted colour variety was introduced into the UK from South Africa in 1969 and 1970. The introduced birds were valuable and were interbred with wild-type birds. Numbers of offspring were increased by fostering clutches of eggs under Bengalese Finches and, a decade later, almost 20% of the Gouldian Finches kept by leading breeders were white-breasted (Evans & Fidler, 1986).

Avicultural bodies must also look to collaborate closely with scientists and organisations which specialise in captive breeding. Mallinson (1991) has argued strongly for increased partnership between zoos, local governments and non-governmental organisations, and strong links would be equally beneficial for aviculture. Similar collaboration has occurred between professional and amateur ornithologists, often with spectacular

results in projects, such as those involved in the *Birds of Estuaries Enquiry* (Prater, 1981) and in producing the *Atlas of Australian Birds* (Blakers et al. 1986). However, collaboration with avicultural organisations has undoubtedly been inhibited in the past by the poor profile generated by their supposed dependence on the pet trade to obtain birds. Unsavoury aspects of the international trade in wild-caught birds (Carter & Curry, 1987; Beissinger et al. 1991) and the damage caused by bird-trapping to wild populations, especially of parrots (Collar & Juniper, 1991), are unacceptable to most, perhaps all, scientists. Wisely, therefore, the AFS has disassociated itself from the bird trade and has publicly spoken out against it. Since doing so, it has strengthened its links with the scientific community. For instance, the RADS Scheme, and the census reported here which is part of RADS PLUS, is due in large part to collaboration with Newcastle University scientists. The AFS has also supported their field studies of estrildid finches in the Kimberley region of northern Australia (Evans et al. 1985; Evans & Bougher, 1987), and these have subsequently formed the basis of a monitoring programme of Gouldian Finch abundance undertaken by the Northern Territory Conservation Commission. The AFS and Newcastle University are still involved and the most recent (1999) Kimberley finch counts involved a group of AFS members. Additional scientific work has been sponsored on the Samoan subspecies of the Royal Parrot Finch *E. cyaneovirens* in Western Samoa in 1993 (Evans et al. 1994), on the Tri-colour Parrot Finch *E. tricolor* in Timor (Indonesia) in 1996 (Madden et al. 1997), on the Vanuatuan subspecies of the Royal Parrot Finch *E. cyaneovirens* in Vanuatu in 1998 (Birchenough & Evans in preparation) and on the Pink-billed Parrot Finch *E. kleinschmidti* in Fiji in 2000. Harewood Bird Gardens is also involved in the research in the South Pacific. The AFS is now contributing to the work of the UK Zoo Federation's Passerine Taxon Advisory Group. An Estrildid Working Group, on which the AFS is represented, has been formed, and has held two meetings, in 1999 and 2000.

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BREEDING THE WHITE-BREASTED AMAZILIA

Amazilia amazilia leucophoea

by Ivor Grogan

In spring 1990, the female White-breasted Amazilia was living in a flight in a lean-to conservatory aviary designed and built five years earlier for the keeping of nectar-feeding birds. The aviary itself is 12ft long x 3ft wide x 7ft 6in high (approx. 3.6m long x 1m wide x 2.2m high). The bottom 2ft (61cm) is walled-up and has a 5in (12.5cm) layer of pea shingle, on top of which is an 18in (46cm) layer of soil and compost, retained within a pond liner which has a hole in it beneath which is a drain. Ficus, dracena, jasmine and bellbine are planted in the aviary. It is wired on one side only as it is connected to the kitchen window, the idea being that the birds can be seen without the view being obstructed by wire. The glass-covered side backs onto not only the office but the access to the garden and the bird sheds, while on the other side there is an outside toilet and another shed. The planting of the aviary has been done in such a way that the birds cannot gather enough speed to fly in a straight line and strike the glass. Within the first year some of the plants growing by the glass had to be replaced by artificial plants because the sun burnt them and they died. The inside of the aviary is sprayed most days and a large flower pot saucer, on an up-turned log, acts as a bath.

As there is a considerable number of visitors, new arrivals are not put into aviaries here until they have become accustomed to humans being near them when they are feeding, etc., but are tended to and left in peace until they settle down. They are caged separately and placed in the office where the temperature can be more accurately controlled, and the cages are cleaned out only when it is really necessary. The female White-breasted Amazilia was brought back from the continent along with some other hummingbirds and sunbirds, plus some finches, three years ago. She was so young that she still had gape marks on the sides of the bill. Although I stated earlier that birds are on arriving caged separately, some species can be mixed, but in my experience often for no longer than a maximum of two to three days. Initially the female was caged with two others that needed watching, and they were checked every few hours of the day and night, and for the first 24 hours were fed by hand with a quite strong nectar mixture.

When the birds were being sorted out for that year's National Exhibition of Cage and Aviary Birds, the decision was taken that she and three others were too young to travel again or be passed on to other bird keepers, so they were left behind. After the National Exhibition things become quiet here for about two months and there was time to reflect and plan what to do next, now that my hobby was turning into a business.

In the next few months, as their condition improved, the three birds took on characters of their own. However, we made sure they did not become too inactive, as hummingbirds can if caged. To help guard against this we pushed grapes between the cage wires and sprayed the birds daily.

The policy here is that birds have to adapt to living together in as near harmony as possible. As hummingbirds and sunbirds are so territorial, in the aviary in question nine nectar tubes were placed at various heights, with some hidden behind plants. The female White-breasted Amazilia was for sale but no one was interested, probably because of her small size and dull coloration, so in December 1998 she was placed in the aviary along with two Violet-eared *Colibri thalassinus*, a Ruby-Topaz *Chrysolampis mosquitos*, a Blue-throated Sapphire *Chlorostilbon notatus*, another Amazilia *Amazilia* spp., plus a Burnished Buff Tanager *Tangara cayana*, a pair of Splendid Sunbirds *Nectarinia coccinigastra*, a pair of Scarlet-chested Sunbirds *N. senegalensis* and a Ruby-cheeked Sunbird *Anthreptes singalensis*. All were placed in the aviary at the same time in the hope that this would minimise territorial disputes. The tanager though decided it was going to build a nest in the middle of the aviary and had to be removed, as all hell broke loose whenever any other bird went near where it was building.

In March 1999 the female White-bellied Amazilia started to build a nest in the most exposed part of the aviary, in a canary coconut nest-pan intended for the sunbirds. It was attached to a cut wigela branch suspended from a post on the wired side of the aviary. As the branch dried out it twisted around so that the nest-pan was almost on its side. It bothered me that no fresh cobwebs were available, leaving me to provide old ones, along with dog hair, cotton wool, horse hair and kapok from the lining of a coat. The female used the cotton wool to make a cup-shaped nest which was only about 1/4in (6mm) high when the first egg was laid. A bit more building work took place before the second egg appeared. Despite not having a male, I checked the eggs just in case she may have mated with one of the other male hummingbirds in the aviary.

I rang everyone I could think of in the UK who might be able to help me obtain a male, but without success. So I then switched my search to Belgium. Three weeks later I found someone in the UK with a male. However, he wanted it for showing and was not willing to sell it. He did though loan it to me and though it was in show condition, appeared not to be in breeding condition and was returned a month later. Much to the amusement of bird keepers who visited here, the female continued her nesting behaviour until midsummer and laid two single eggs which showed signs of being fertile, but failed to hatch.

In late October I received a phone call to say that a consignment of hummingbirds from Peru were due to arrive in Belgium. Three weeks later I received a call to say that the birds had left Peru and two days later

learnt that they had arrived in Belgium. Twelve hours later I was standing in the dealer's premises in Belgium and was surprised to see these amazing little birds in such numbers - 30 of one species, 10 of another, and so on. I selected three males as possible mates for my female. One was very young, one was about two years old and the third was a brilliantly coloured older bird.

I returned home to England hoping that the birds would come through their quarantine in Belgium without any problems. As always things did not go according to plan, a week later I received a phone call with the bad news that the second of my males had died. I turned down the chance of a replacement, deciding instead to stick with the two males I had already paid for, although I realised this might create a problem.

As soon as they had completed their quarantine, I gathered together the paperwork and made arrangements to travel to Belgium to collect them, praying that the French would not blockade the port of Calais when we were travelling home, as they had done on previous trips. We had no desire to get stuck abroad, with delicate hummingbirds that required nectar about every twenty minutes and heated accommodation. Also, I had been stopped no less than eight times before when leaving France, once even being escorted to the Customs because of confusion over the identity of one of the species I was bringing back to England, a misunderstanding which had taken six hours to resolve. This time thankfully there were no such difficulties and we soon reached Dover where we were held up at Customs for just 10 minutes, before driving home at great speed and arriving back some five hours after leaving Belgium.

The week before Christmas the birds had already been taken out of the aviary ready for the National Exhibitions in England, Scotland and Wales, leaving the female White-bellied Amazilia with the flight all to herself. The birds did amazingly well on the show bench and the first to be returned to the aviary was the female Scarlet-chested Sunbird. She had been back in the aviary for all of five minutes when she had to be removed again because although the sunbird was at least twice as big as the hummingbird, she was being attacked by it. It was decided to leave the hummingbird in the aviary on her own. Then in early January one of the males was introduced into the aviary. I wondered how long it was likely to be before I would have to get into the aviary to separate them, which would not be easy as it was designed without a door, and has to be entered by climbing in through a window!

I stood back and waited to see what would happen but much to my surprise, the female sat at one end of the aviary and the male sat at the other. This went on for two days, before I removed the male and replaced him with the oldest of the original three. In the meantime the female had started nest building in earnest.

I shall never forget the pair trying to display in such a small area. After an hour or so though they ended up on the floor of the aviary, spinning around in circles like two fighting cocks. This lasted about two minutes and stopped just as the decision was being taken to intervene and separate them. After this I thought it was the end of trying to get her to live with the male, but how wrong could I be! I have never seen them fight again. Further flying displays were seen and on the third day I witnessed them mating. Following the mating I thought it best to remove the male, but he failed to settle down back in a cage and two days later was returned to the aviary.

Within seconds of being returned to the aviary the male showed renewed interest in the female, but she saw him off. There was no fighting though and after five minutes they stopped chasing each other and started to display. After doing this periodically for 20 minutes, the female alighted on a branch, having first taken a sip of nectar from one of the tubes, while the male perched at the other end of the aviary. The female started to bow and as if by invitation the male perched beside her and then mating took place. This behaviour always followed the same pattern. She would mount him and then fly a short distance (about 2in (5cm)) and then allow him to copulate with her. This happened speedily after which they would part and then keep their distance from each other. After about an hour the male was removed for a while. On the fourth day the female laid her first egg followed two days later by another on January 15th. Neither hatched.

Following this the plants in the flight were rearranged, some being pruned and others moved. Because of concern that the female would lay another clutch without having mated, the nest was destroyed. February 1st the male was reintroduced in an all-wire finch cage and was released from this. The female was still exploring the rearranged aviary but as soon as the male was reintroduced the birds started to display again. The male mated with the female and was removed after two hours. Next day he was reintroduced and because the female was nest building quickly, was not taken out until two days later.

During the visit of a friend who doubted my claim that I was attempting to breed hummingbirds, I reintroduced the male into the brightly lit aviary and the friend was able to witness the birds displaying and mating three times within 20 minutes, by which time it was 6.00pm and dark outside. The male was removed at 8.00pm and returned again the next day because the female was building the nest very quickly. He was removed again about 3.00pm. The female's flight changed slowly during the next few days and by Sunday was more butterfly-like and graceful and elegant, and, as she twisted and turned it was possible to see all the glittering feathers as never before. The male has a helmeted crest seen only when he is displaying.

When changing the bird's bath water that Sunday I stood on something to take a sneak look into the nest and to my great delight there was a

translucent pink egg in the saucer-shaded nest of white dog hair and cotton wool. When I checked the nest on Tuesday there were two eggs, the first of which had started to turn white. The following day the female was sitting high in the flight with her plumage fluffed-up. I did not panic as if you do you often make mistakes, instead I watched her carefully during the morning to make sure she was feeding, and when I was satisfied about this, left her in peace. That afternoon I was visited by a lady from MAFF (Ministry of Agriculture, Fish & Food), who came to stamp my licences. She took an interest in the birds, having previously only seen hummingbirds on TV, and felt I should not be surprised by the female's 'rough' appearance and suggested that a small bird laying two such large eggs must be equivalent to a woman giving birth to a 501b (22kg) baby!

The next morning, to my utmost delight, I found that the female was sitting on the eggs in the nest. She was sitting in earnest and came off about once an hour for seven minutes, with this lengthening over the next few days. She bathed in the evening. As incubation progressed, she spent longer periods off the nest. It was decided to cover the aviary windows with dark cloth in case she was frightened by anything. The kitchen window and the wired side of the aviary were left uncovered though, as she was used to the three dogs in the yard at night next to her flight.

The temperature of the flight had risen to 78°F (25.6°C) since January and I sprayed the aviary to increase the humidity. During the following days when the sun came out though, the temperature at the nest site got up to 84°F (28.9°C) and at night fell as low as 66°F (18.9°C) - and the fan heater blew-up due to the condensation.

The weather was quite warm on February 10th and the female was staying off the nest for approximately half an hour at a time, so in the afternoon when she was feeding, 13 days after incubation commenced, I checked the eggs. It was the first time she had been vocal throughout the incubation. Neither egg had hatched, though one looked as so it might be on the point of pipping. The next day curiosity again got the better of me and I got a severe vocal reprimand from the female when I went into the aviary again. In the nest was a chick with an orange yellow face and feet and a slate grey back. Hatching had taken 15 days from when the female began sitting in earnest, and 19 days from when the first egg was laid.

I added a quantity of a probiotic and SMA gold milk powder to the nectar mixture. Two days later I checked the nest again and there was a second chick about half the size of its older sibling. After about a week the two chicks were nearly the same size. The temperature settled down to an average 78°F (25.6°C). The humidity continued to be kept high to encourage the fruit flies to breed. Up to 1½ in (4.5cm) high the nest was a work of art woven from cotton wool and dog hair and it was amazing how as the female

*Ivor Grogan***Female feeding chick**

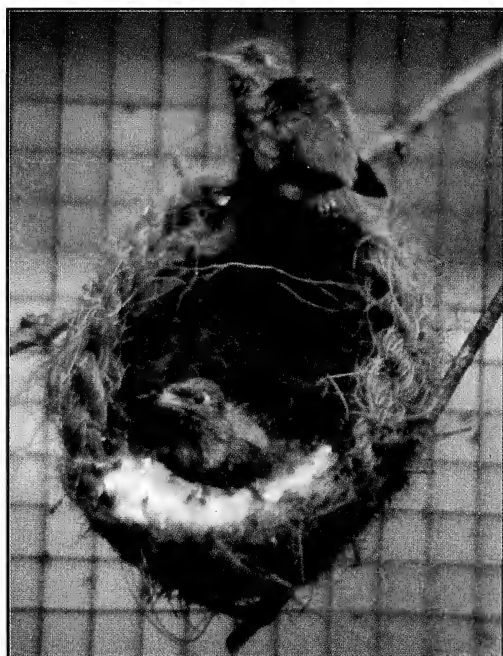
sat on the nest, she pulled nest material towards her as so she was tucking the chicks in. As the chicks grew larger, the female caught increasing numbers of fruit flies, feeding twice an hour and catching nearly 50 at a time which she regurgitated and fed to the chicks. The lights were left on throughout the night, and on at least one occasion the female was continuing to catch fruit flies at 1.00am. The female tolerated me, visitors, the dogs, and even a Blackbird *Turdus merula* banging about on the plastic roof of the aviary.

March 3rd the female stopped brooding the chicks and took up a position above the nest. The next day the bath water was replaced by a small dish of water on the window sill. March 6th the first chick's eyes opened and both chicks started to take on a hedgehog-like look as their pin-feathers started to emerge. The colour of their faces was changing from bright orange to pink and their beaks had turned light pink with a black tip, the inside of their beaks though remained brilliant orange. Their feet had changed from orange to light pinkish white. Their backs were grey in places while the wings were light grey with white tips. March 9th the first chick exercised its wings after being fed. It hung one wing over the side of the nest and propelled it amazingly fast, then did the same with the other wing. March 10th the female was seen with her eyes closed for the first time and the chicks, which were now larger than her, were beginning to get longer more typical hummingbird-like beaks.



Ivor Grogan

One chick sitting on top of nest, other in nest



Ivor Grogan

Similar view at a later stage

March 14th the eldest chick left the nest. The second chick was not yet ready to leave and the female was feeding it three times as often as she was feeding the eldest chick. She spent a lot of time encouraging the chicks to leave the nest and called loudly if she thought there was a threat to them. Although the female had been in captivity for three years, she obviously retained many of her wild traits.

Although large quantities of fruit-flies were taken when the chicks were being reared, they were not taken to the extent that had been envisaged. March 20th the eldest chick was seen feeding on its own while perched. The second chick was not developing as quickly as its older sibling and was hand fed for two days while remaining perched in the aviary. Subsequently sexed and found to be a female, it soon gained confidence and began to feed from a perch as its older sibling, found to be a male, was already doing.

March 29th the breeding male was returned to the aviary, as the female was rebuilding at the same site, and was left there for 24 hours before he had to be removed because of his amorous advances towards the female chick. I hope to eventually breed from the chicks and with this in mind acquired a year old female at a show recently.

Diary of events

January 15th	Male introduced to the female.
January 18th	Male removed as he appears to be losing too much weight.
Jan. 20th - Feb. 5th	Male put in with female for two hours every day.
February 6th	First egg laid.
February 8th	Second egg laid.
February 10th	Female commences incubation, but continues building the nest for the next four days.
February 24th	First chick hatches.
February 26th	Second chick hatches at 10.00am. This chick was fed before it had fully emerged from the egg. The female consumes nectar, then 30-50 fruit-flies and then nectar again, before feeding the chicks. The temperature at the nest-site is 78°F (27°C).
March 3rd	The female stopped brooding the chicks.
March 4th	Bath removed in case of accident.
March 6th	Chicks' eyes open.
March 10th	Oldest chick exercises its wings.
March 11th	Flight feathers emerge from sheaths.
March 14th	Oldest chick leaves nest.
March 20th	Oldest chick feeds from perch. Youngest chick leaves nest.
March 21st	Both chicks test their wings.
March 23rd	First chick feeds on the wing.
March 29th	Youngest chick flying but is not as strong as its sibling.
March 31st	Youngest chick feeds on the wing.
April 1st	As both chicks are feeding on their own they are removed from the aviary.

NOTES ON KEEPING AND BREEDING THE ELEGANT PITTA *Pitta elegans*

by Theo Pagel

Introduction

At the beginning of April Cologne Zoo opened its new tropical house called The Rainforest. It is a complex of about 2,000 sq m. (approx. 21,500 sq ft) in which we give visitors an impression of the flora and fauna of an Asian rainforest. In it we keep insects, fishes, amphibians, reptiles, birds and mammals. It is a combination of a walk-through aviary and separate enclosures. We have already been quite lucky with the successes we have achieved in this new house. We have bred fishes, reptiles and birds. In this article I provide details about keeping and breeding the Elegant Pitta *Pitta elegans*.

Systematics

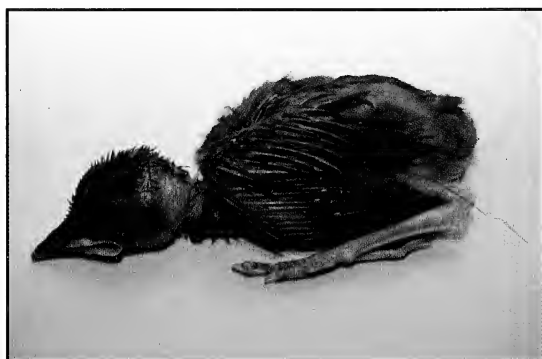
Pittas belong to the family Pittidae of the Order Passeriformes. Depending upon which classification you follow there are one to six genera and about 30 species with several subspecies. The Elegant Pitta has the following subspecies: *P. e. elegans*, *P. e. virginalis*, *P. e. vigorsii*, *P. e. hutzi*, *P. e. concinna* and *P. e. maria*. They differ from each other in distribution, size and coloration (for details see Erritzoe and Boullet-Erritzoe, 1998).

Description

Adult: length 155mm-190mm (just over 6in-7½in) depending on the subspecies; wing 108mm-119mm; bill 28mm-39mm; tarsus 35mm-37.5mm; weight 48-63g (Lambert and Woodcock, 1996). Both sexes have a black cap, with a beige coloured stripe above the eyes, shading to bluish-white behind the eyes, in the case of *P. e. concinna*; the sides of the head, neck and throat are black. The back and wings are green, with azure-blue lesser wing-coverts (like many other pittas); the short tail is dark green. The breast and flanks are warm cinnamon; the belly and under tail-coverts are red. The bill is black, the eyes brown, and the legs beige.

Nestling: (previously undescribed) blackish with dark legs and bill (see photo p.166).

Juvenile (fledgling): a little smaller than adult, bill dark beige with some red; lighter ring around eyes; otherwise, all in all, not that light and with the back more or less blackish (see photo p.167).

*Theo Pagel***Nest of Elegant Pitta***Theo Pagel***Egg of Elegant Pitta***Theo Pagel***Nestling at about 10 days old**

*Theo Pagel***The first fledged Elegant Pitta at Cologne Zoo****Distribution**

The Elegant Pitta is an Indonesian endemic, occurring on the Moluccas, Sulawesi, Lesser Sunda Islands and Penida (for the distribution of the races see Erritzoe and Boullet-Erritzoe, 1998).

Status

Most accounts suggest that the Elegant Pitta is a widespread and relatively common species. On Sumba in the mid-1990s it was estimated that there was a population of about 11,000 birds. Only in some parts of its distribution is it uncommon or rare, as for example on Flores.

Habitat

The Elegant Pitta can be found in different forested habitats, from dry monsoon woodlands to the wetter rainforests of the South Moluccas. Even in small patches of trees along watercourses, often close to villages, you can observe this beautiful bird. It can occur from sea level up to 1,500m (approx. 5,000ft) on Buru.

Living in the wild

So far as we know, *P. e. elegans* and *P. e. vigorsii*, make migratory movements, but we have few details about those movements. Lambert and Woodcock (1996) do not say anything about the food but in Erritzoe and Boulet-Erritzoe (1998) we learn, that in the stomach of one bird collected on Timor there were small beetles and in another's stomach there were snail remains. From time to time it seems as so they accompany Emerald or Green-winged Doves *Chalcophaps indica* searching for food.

Their breeding season is also poorly documented. Eggs of *P. e. concinna* were found in April in the Lesser Sundas. If one combines all available data it is possible to say that the breeding season of all subspecies spans the middle part of the year. They build a typical closed nest, using leaves and branches, with the entrance at the side. The interior of the nest is lined with fine rootlets or fungal hyphae. The eggs are white, covered all over with rufous-brown and purplish-grey patches. Eggs of *P. e. concinna* have measured 26.9mm x 21.1mm, 27.3mm x 21.9mm and 28.1mm x 21.9mm.

Keeping and breeding

As most of the pittas have seldom been kept, very little information has been published about keeping and breeding them. I have been unable to find any about keeping and breeding Elegant Pittas and if any member knows of any, I will be pleased to learn in which publication or publications it has appeared.

Pittas should be kept only in larger planted aviaries or even better in tropical houses. Keeping them in smaller enclosures makes little sense as they are unlikely to breed in these. Pittas can be very aggressive between each other so they need plenty of room and places to hide from each other.

Our adult pair came from a dealer in the Netherlands. Both are wild caught and we do not know how old they are. They belong to the subspecies *P. e. concinna* which occurs on the northern Lesser Sunda Islands, namely Lombok, Sumbawa, Flores, Adonara, Lomblen, Alor and some other small islands.

We got them at the end of 1999. After a quarantine period (when we kept them together in a cage measuring 1m x 1m x 2.5m (approx. 3ft 3in x 3ft 3in x 8ft 2in) we put them in our walk-through aviary in the new tropical house called The Rainforest. The free-flying part is about 1,250sq m (approx. 13,500sq ft) and is up to 17m (approx. 56ft) high. The temperature varies from 20°C-35°C (68°F-95°F) and the humidity from 65%-99%. The enclosure is planted with different south-east Asian plants and trees up to 7.5m (approx. 25ft) high. The vegetation and birds get daylight through the transparent roof. We offer the birds a low-iron, softbill food and a lot of different livefood (flies, crickets, mealworms, etc.) several times a day.

Since the beginning of March the two adult birds have lived in the tropical

house, in which the hill in the middle of the house is their preferred territory. They have shown no aggression towards other birds such as the Silver-eared Leiothrix *Leiothrix argenteauris* and Vietnamese Pheasant *Lophura hatinensis*. Together with the birds living in the same enclosure are live fish, amphibians, reptiles and fruit bats.

On May 3rd this year we observed the pittas carrying nest material, and in three days they had built a nest which measured 40cm (approx. 16in) in diameter and 35cm (approx. 14in) high. It was built using only dry materials such as leaves and branches, and had the entrance at the front (see photo p. 166). The nest was on an artificial rock at a height of 125cm (5in) directly by the wall. On May 10th we found three eggs in the nest and on May 28th saw two youngsters in the nest. On June 7th we found a dead youngster and an infertile egg in the nest. One bird was missing. The egg was white with brownish spots and measured 27.0mm x 21.0mm (see photo p. 166). The pair immediately began to build a new nest again by the wall and 5m (approx. 16ft) from the first nest. It was a little larger than the first nest and again built on an artificial rock, this time at an height of 140cm (5½in). The pair again took about three days to complete the nest. After consulting colleagues at the zoos at Arnhem and Frankfurt about their experiences with pittas, we decided not to examine the nest anymore. On July 12th we saw two young Elegant Pittas hopping on the ground. One of them was larger than the other, and it seemed as if one was from the first clutch and the other from the second. We observed the adults bringing up to six mealworms to the youngsters. When they realised that we were observing them they would not feed the young and would not even get close to them. After a short alarm call the youngsters hid themselves and waited until we had gone. Both adults fed the youngsters but we do not know for sure if the birds brooded both of them.

Both young pittas are independent now and the pair has built a new nest, and we hope that further youngsters will follow.

Acknowledgements

I would like to thank my colleagues at Arnhem and Frankfurt for their advice, also our horticulturist and the keepers for their work and passion without which this success would not have been possible.

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BREEDING THE PURPLE-BELLIED PARROT

Triclaria malachitacea

by Bob Grantham

The Purple-bellied Parrot is endemic to the forested areas of south-east Brazil (see Low, 1997). Both sexes have dark green plumage tinged with blue on the underside of the wings and tail. The male is distinguished by the purple patch on his abdomen. The iris is brown, the beak horn-coloured and the feet grey in both sexes. The male of my pair has a vivid orange outer ring in the iris.

Having had the privilege of owning a pair of Purple-bellied Parrots 25 years ago (Low, 1976), I have had a lasting fascination with this species. No chicks were reared by that pair. I always hoped that one day I would be able to obtain another pair of Purple-bellied Parrots. In January 1997 my dream came true when a pair arrived from Loro Parque. However, on arrival the female lacked a tail. During the past three years no sign of tail growth has occurred.

After the normal quarantine period of 35 days the pair was placed in an aviary measuring 9ft x 6ft x 3ft (2.7m x 1.8m x 91cm). The shelter of this aviary adjoins a large kitchen window so I was able to observe them closely. They were provided with a nest-box measuring 24in x 8in x 8in (60cm x 20cm x 20cm). In January and February 1998 the male was seen to feed the female and to mate with her. This behaviour was observed on many occasions. Four eggs were laid at the beginning of March. These proved to be infertile and were removed. The pair did not nest again that year. The same behaviour was observed in January and February 1999. Eggs were laid at the beginning of March. Again they were infertile.

In January 2000 the male was observed feeding and mating with the female on several occasions. Four eggs were laid in March. These proved to be infertile and were removed approximately two and a half weeks after they were laid. To my surprise the female laid a second clutch of five eggs at the end of April. On May 25th a chick was heard. The feeding of soft food was immediately increased to twice daily at 8.30am and 5.30pm. Inspection of the nest was left until June 4th when two chicks were observed. From then on the chicks were inspected twice daily. If they had not been fed well they would have been removed for hand-rearing. The three remaining eggs were removed. One contained a chick which was dead in shell and the other two were infertile.

By the 40th day the first chick was fully feathered. There was a large discrepancy in size and age between the two chicks and, at that time, the plumage of the second was only just starting to appear.



Bob Grantham

Male Purple-bellied Parrot

During the first four weeks the female remained in the nest-box. During the fifth week she came out, returning only to feed the chicks. Occasionally the male was seen to enter the box. On July 11th the first chick was observed at the nest hole. It came out permanently on July 14th. The second chick left the nest on July 20th, although it was not completely feathered on the back and wings. The immature plumage is similar to that of the female. Both young ones were then fed by her alone. The first one was seen to feed itself on the sixth day out and the second one on the seventh day.

The young were extremely steady. On the day it left the nest, the second youngster flew on to the shoulder of the lady who feeds the birds. Ten days later it still allowed her to stroke its head. The whole family are very placid. Three neighbours' cats are in the habit of sitting on the roof of the aviary. The parrots try to nibble the cats' feet!

The diet of the Purple-bellied Parrots consisted of sweetcorn, apple, carrot, celery, pear and EMP rearing food. Powdered cuttlefish bone was sprinkled over the food. The seed consisted of sunflower, canary, millet, buckwheat, safflower and hemp. Greenfood such as lettuce, cabbage and watercress was also given. Fresh water was available at all times.

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As described above, the Purple-bellied Parrot *Triclaria malachitacea*, has been bred by Bob Grantham. This is probably the first successful breeding of this species in Great Britain or Ireland. Anyone who knows of a previous breeding is asked to inform the Hon. Secretary.

Bob Grantham, who for several years has served as a Council Member, joined the Avicultural Society in 1953.

BREEDING AND GROUP DYNAMICS IN MAGPIE SHRIKES *Corvinella melanoleuca* AT DISNEY'S ANIMAL KINGDOM

by Paul Schutz

Magpie Shrikes *Corvinella melanoleuca*, also called Long-tailed Shrikes because of the length of their tails, are conspicuous inhabitants of the acacia bush and open savanna in eastern and southern Africa. Two subspecies have been described: *C. m. melanoleuca* found in southern Africa south of the Zambezi River; and *C. m. aequatorialis* found in eastern Africa, specifically south-western Kenya and Tanzania.

Magpie Shrikes are gregarious and usually found in groups of six or so birds, consisting probably of a breeding pair and previous offspring. During the breeding season, the non-breeding shrikes act as 'helpers' that assist in the care of others' chicks. In species in which cooperative breeding has been observed, the 'helpers' are usually offspring of the breeding pair which as yet have been unable to acquire breeding territories of their own. However, the author has worked with a group of four unrelated, wild-caught Magpie Shrikes which split into a breeding pair and two 'helpers' which assisted in the care of the chicks at Houston Zoological Gardens, Texas, USA. In captivity perhaps, the absence of a real family group leads Magpie Shrikes to 'adopt' long-term cage-mates as relatives, which become 'helpers' at the nest. The chicks, when fledged, also joined in the care of subsequent clutches of chicks. On one occasion, a total of seven birds were seen at the nest awaiting their turn to feed the chicks.

Disney's Animal Kingdom acquired a group of five Magpie Shrikes, which includes the two 'helpers' from Houston Zoo, for its new African aviary, located along its Pangani Forest Exploration Trail attraction. The aviary measures 162ft long x 62ft wide x 45ft high (approx. 50m long x 20m wide x 14m high). The thickly planted habitat has a plateau about 20ft (6m) high running along the western third of its length. From the northern edge of the plateau, two waterfalls cascade into a large pool, which is the main source of drinking water for the aviary's inhabitants. The aviary contains more than 20 species, including Hadada Ibis *Hagedashia hagedash*, Hammerkop *Scopus umbretta*, Ross's Touraco *Musophaga rossae*, African Grey Parrot *Psittacus erithacus*, Carmine Bee-eater *Merops nubicus*, Superb Starling *Spreo superbus*, Racquet-tailed Roller *Coracias spatulata*, African Pygmy Goose *Nettapus auritus* and Brimstone Canary *Serinus sulphuratus*. A total of eleven feeding stations are scattered throughout the aviary, plus one at the pool's edge specifically intended for the exhibit's waterfowl. The basic diet consists of chopped mixed fruits, chopped greens, soaked Mazuri

brand parrot breeder and carnivore diet. The carnivore diet is mixed with the soaked parrot breeder to encourage mostly carnivorous birds, such as the shrikes, to ingest the more nutritionally complete pellets. These diets are supplemented with livefood, such as mealworms, waxworms and crickets.

Throughout the quarantine period the five shrikes were kept within visual contact but in two separate groups: the 'helper' pair from Houston Zoo (hereafter referred to as pair A, or male A and female A) and a male and two females (hereafter referred to as group B, or male B, female B1 and female B2) which were acquired from a private aviculturist. Despite them being unrelated, the Houston experience led us to the expectation that these five birds would form a cohesive social group. On February 16th 1998 the two groups were moved into two acclimation pens inside the aviary. Two days later, all five were released into the aviary. Pair A exhibited breeding behaviour almost immediately, and by March 1st had begun constructing a nest high in a ficus tree.

By April 4th one egg was present in the nest constructed by pair A. At this point, it became obvious that the five birds had begun to revert to their earlier groupings. The three individuals of group B spent much of their time at the opposite end of the aviary, away from the nest that pair A had constructed, vocalizing and doing their wing-flashing display which entails raising their wings above their heads to reveal their white wing patches. Pair A began to defend the nesting territory, actively chasing other species from the area. Aggression was also observed between female A and male B. On one occasion the two locked feet and fell together from a tree before separating. Interestingly, just four days later, male A and female B2 were observed jointly displacing a Racquet-tailed Roller. Three eggs were present by April 7th and the hypothesis was made based on the Houston experience that once chicks hatched, even non-breeding birds would assist in caring for them. Unfortunately, all three eggs were missing on April 24th and pair A began nest building again.

While the two groups seemed to stay separate most of the time, they were occasionally seen perched together, although not much interaction was noted between them. This would change within a few months. By mid-May, 1998, pair A had five eggs and were again defending their territory. An interesting interaction occurred on May 16th, when one of the Hadada Ibis perched in the tree that contained the nest. Soon all five shrikes repeatedly scolded and mobbed the ibis in an obviously coordinated effort until it left the area. Just two weeks later, all the eggs were missing again and keepers removed the nest. It measured $6\frac{1}{2}$ in (16.5cm) in diameter and 5 in (12.7cm) deep, with the cup constructed mostly of Spanish moss, pliable small twigs (about 5 in (12.7cm) long and less than $\frac{1}{10}$ in (2mm) in diameter) and larger twigs (about 6 in-10 in (15.3cm-25.4cm) long and $\frac{1}{12}$ in- $\frac{1}{8}$ in (2mm-



Natalie Mashburn-Lindholm

Adult pair of Magpie Shrikes. The female (right) has white on the flanks.

3mm) in diameter). The lining of the nest consisted of moss, pine needles, and pliable small twigs. Nest construction began again just two days later.

On June 10th, pair A were observed displacing female B1. This event seemed to signal the beginning of a period of more active interaction between the two groups. Now, when the two groups came together, there were vocalizations, and wing-flashing was observed among them. These wing-flashing ceremonies were probably territorial displays, but might also be interpreted as greetings among members of a group (Lefranc, 1997). Three eggs were discovered in the nest on June 12th, but by July 1st 1998, they were missing and this time, the nest appeared to have been partly destroyed. When nest construction began again, female B1 was observed on at least one occasion carrying nesting material to the site. The new site they had chosen was apparently not suitable and pair A eventually constructed a nest in the ficus tree where they had built originally with, apparently, no help from group B.

Increased insect consumption led keepers to check pair A's nest on October 30th. Two chicks were present which appeared to be a few days old. All five adults vigorously defended the area around the nest from other birds, especially the White-collared Kingfisher *Halcyon chloris*, with which they seemed to be particularly fixated. However, only the parents were observed attending to and feeding the chicks. Crickets, waxworms and mealworms made up the majority of the food taken to the nest during the first two weeks. The parents were observed removing a faecal sac from the nest and dropping it elsewhere in the aviary. By November 8th, both chicks were observed exercising their wings, and appeared close to fledging, and one chick fledged on the 13th. However, by the 15th there was no sign of either chick. An extensive search of the aviary turned up the body of one of the chicks which had been dragged into a hollow beneath a tree stump.

Apparently unphased by the setback, pair A had by the first week in December laid four more eggs and were incubating them. During the incubation period the breeding male as usual displaced other birds from the area of the nest. On December 13th 1998, pair A were observed carrying waxworms and mealworms up to the nest. A check of the nest on December 21st revealed no eggs but a single, large, healthy looking chick. January 4th 1999, the chick left the nest. Shortly thereafter, it was attacked by birds of group B. The attack, while not well observed, was vigorous enough to cause serious damage to a toenail of the fledgling's right hallux, resulting in the removal of the nail. The chick was removed to the nursery where its rearing was completed by keepers.

Undaunted, pair A returned to nesting, and by January 25th, had four more eggs. Despite group B's aggressive behaviour towards the fledgling, the three continued to join the breeding pair mobbing and displacing larger birds which approached the nest. A nest check on February 15th revealed a single chick. The chick was seen exercising its wings on a branch close to the nest on February 28th. On March 6th, the chick left the nest and was attacked by group B.

The three flew at the young bird, grabbing its wings and feet. The parents sat nearby, vocalizing and puffing out their feathers, but did not intervene or actively defend the chick. The attacks continued and the decision was taken to intervene. Keepers caught the fledgling and placed it in a small holding cage. The decision was made to try to lure one or both of the parents into a holding cage so that they could finish rearing the chick. Shortly before the fledging of this second chick, the juvenile that had been removed to the nursery for hand rearing was returned to the holding cage in the aviary where it was in visual contact with the five adults.

The adults treated the first juvenile like an intruder, displaying and uttering their threat vocalizations while perched around the holding cage. Oddly, all

five adult shrikes showed the same reaction to the fledgling in the cage. They perched in close proximity to the chick and vocalized, but would not approach or feed it, despite the presence of food and the constant begging and distress vocalizations of the fledgling. It quickly became apparent that this chick too would have to be hand reared.

Three days after the fledging of their most recent chick, pair A began nesting again. The decision was made to prevent any further nesting attempts until group B could be removed from the aviary. To this end female BI was caught and placed in a holding cage with the two juveniles to await shipment to another institution. Pair A continued to build nests and lay eggs, but each time keepers dismantled the nest and discarded the eggs. On June 7th, keepers observed that the breeding female had an injured right leg. Over the next two weeks the injury appeared to worsen but she foiled numerous capture attempts and on June 22nd was discovered dead in the aviary.

The death of the breeding female left two males and a single female in the aviary, and breeding behaviour began again shortly afterwards. Both males were observed courtship feeding the female. At the time of writing the original breeding male, male A, and the remaining female are building a nest and it is planned to let them breed. It is our hope that male B will recognise the female as a member of his group and will not interfere. It will be interesting to see if he assists the parents in rearing any chicks, thus reforming a cohesive group. Only time will tell if this scenario is played out.

Acknowledgments

Most importantly, I would like to thank the staff of the aviary department at Disney's Animal Kingdom, including Curator Grenville Roles, zoological managers Chelle Plasse and Scott Barton, and keepers James Grant, Susan Congdon, Greg Bockheim and Shannon Mezzell. Without their encouragement, assistance and observations, this paper would not have been possible. I would also like to thank the bird department at Houston Zoological Gardens, especially Curator Lee Schoen, senior keeper Trey Todd and keeper Ric Urbant all of whom were particularly supportive and helpful. Finally, thanks to Natalie Mashburn-Lindholm for providing the photo.

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BREEDING THE LEMON-BREASTED CANARY *Serinus citrinipectus* AND NOTES ON SOME OTHER *Serinus* SPECIES

by Tony Jolliffe

General notes

The pair of Lemon-breasted Canaries were bought in 1998 in Belgium on impulse because I thought them beautiful. I also purchased enough of the food they were eating to last a month. I knew nothing more about them at that stage.

Nesting occurred and eggs were produced late in 1998. However, the shells were very thin and porous and all proved to be infertile. Because the female was showing signs of stress the pair was separated and reintroduced early in 1999. The first nest produced similar results to those in 1998 but the second nest produced three young. All were reared and proved to be three females. The same pair has hatched and reared two young in 2000.

Housing and food

The pair are housed in a standard canary double-breeder which measures 120cm x 30cm x 45cm (approx. 39¹/₂in x 12in x 17³/₄in). The standard diet was mixed small millets with wild food when available. This has since been replaced with a good British bird mix which seems to have advantages. Food taken during rearing includes the standard seed mix both dry and soaked for 24 hours, chickweed *Stellaria* spp., seeding grasses (Cock's Foot *Dactylis glomerata*, Rye-grass *Lolium perenne*, Annual and Rough-stalked Meadow-grasses *Poa annua* and *P. trivialis*), Redshank *Polygonum persicaria*, Pale Persicaria *P. lapathifolium*, Groundsel *Senecio vulgaris*, Rat's-tail Plantain and Mouse-ear Plantain *Plantago* spp.

Nesting

The pair nested in an all-wire basket with a felt lining. The eggs were pure white. Incubation is thought to have taken 13-14 days. Upon hatching the chicks had blackish brown skin and copious white down. The gape was brilliant red. During the first few days the male seemed to feed the female which then fed the chicks. Feeding was shared after about three days. Development of the chicks was roughly five to seven days more advanced at each stage compared to that of the domestic canary. The adults were particularly devoted and protective parents. The female would attack the hand rather than leave the nest.

General information and observations

The birds are very territorial, and the male will sing at the slightest sound. Opening the door of the birdroom or dropping something will start him singing. Oddly enough although his singing continued throughout incubation it stopped the day the chicks hatched and did not start again until the chicks fledged. Another interesting observation is that on several occasions just after the chicks fledged, both parents were seen driving them down, and on two occasions grabbed them and threw them down when they were fluttering against the wire. Although it worried the hell out of me, no damage was done to the recently fledged young in what appeared to be an instinctive process aimed at getting them to safety.

Once, just as the young were starting to feed, one begged for food but got no response from the male. The young bird immediately adopted a 'head down shoulders up' aggression posture and was then fed.

Because the colour of the chick's gape, the skin and the eggs differed from those observed in southern Africa where the gape was recorded as being bright yellow, the skin pale pinkish with sparse whitish down and the eggs white, lightly streaked with brown (Brickell, 1997; The Avicultural Research Unit, 1997), I have been reluctant to introduce new birds until this matter is resolved. Instead, I decided to try to mate the male with several females as one can with domestic canaries. I put the male in with the female which had started nesting as I have done hundreds of times with domestic canaries and have never seen such panic in a bird. I had to remove the male before the female injured herself.

Later I put a male Tibetan Siskin *S. thibetanus* in with the same female to see if the result would be the same and there was no problem at all. Because the female Tibetan Siskin had died and I was short of space I left him there. They have now gone to nest and it is fascinating to watch the male, which is more fastidious than the female, cleaning out the nest whenever she leaves it.

I later managed to obtain another pair of Lemon-breasted Canaries in Belgium which at the time of writing (August 8th), are hatching out their third nest. The first was lost, along with other newly hatched young, as a result of an infestation of mite the likes of which I have never experienced before in all my 50 odd years of bird keeping. It has taken until now and just about every chemical known to get rid of them and get the birds back into a decent condition. I hope it is a case of third time lucky, as this pair is supposed to have come from northern Mozambique, as opposed to my original pair which is believed to have come from southern Mozambique. I am very keen to study them.

I bred the White-bellied Canary *S. dorsostriatus* last year but I imagine that this species has been bred often enough for you not to require details.

I have bred domestic canaries most of my life starting from when I was 10 years old and even as a child their range of shapes and sizes fascinated me. As I grew older I began to wonder more about how they evolved and question the accepted belief as to their origin. A series of articles written by a Dutchman who has translated most of the seventeenth and eighteenth century canary books encouraged me in my view that not all type canaries evolved from *S. canaria* - the wild Canary.

My attention first turned to the Red-fronted Siskin *S. pusillus*. Later I turned my attention to the Cape Canary *S. canicollis* on account of its size, posture and origin. In the seventeenth century the port of Gent was Dutch and the trade between there and southern Africa was already well developed making it likely this species would have been available to canary breeders of Gent at that time.

About three years ago I went with one of the buying trips to Belgium where I found two Cape Canaries - both immature and very plucked. I brought them back with me and as I have learned more about the Cape or Yellow-crowned Canary and its subspecies, I have realised that it is a very complicated subject and also I have not enjoyed myself so much for years. What started off as a study of the origins of the varieties of domestic canary has become a study of the Cape or Yellow-crowned Canary.

They are by and large, quiet, confiding little birds the beauty of which is too easily missed when they are packed together in dealers' cages. Often immature and dirty, they appear drab and uninteresting but these same birds when clean and fit, and in full adult plumage have an amazing range of colours. I am finding sorting out the differences between the subspecies extremely difficult and suspect one reason for so few captive breeding successes may be because pairs are often made up of males and females of different subspecies.

At the moment I think I have specimens of *S. c. canicollis*, *S. c. grisetergum*, *S. c. flavivertex* and *S. c. sasii*, but only two true pairs. I am far from sure though. Although most do well on my canary regime there are problems with *S. c. sasii*, which shed feathers and become bald very quickly. I feel sure this is a dietary problem and am looking closely at this. I have increased their vitamin and protein intake which looks as if it is helping to improve the situation. They appear to be far more gregarious than the others and I am wondering if the stress of being isolated is also a factor. *S. c. flavivertex* too might have specific requirements. Unfortunately, I have recently lost my male. I had a male for two years and although it was always fit it never really came into breeding condition, lacking perhaps the stimulation of a female.

It is a highland bird, occurring for example on Mt Elgon, Mt Kenya and Mt Kilimanjaro, leading me to also question whether I have got the conditions

quite right for it here in Kent.

Recognition of the problems of obtaining true pairs, especially of species such as the Cape or Yellow-fronted Canary, with a diversity of subspecies, led to the idea of undertaking an African Serins Survey. The aim of this is to discover which species and subspecies are being kept, not just in the UK but worldwide, and through this establishing contacts with other keepers with a view to exchanging information and birds in order to make-up true pairs and establish captive populations while these birds remain relatively freely available.

If you keep African *Serinus* species and wish to participate in the survey, would you write to:- Bryan Reed and Tony Jolliffe, African Serins Survey, 62 Northwood Drive, Sittingbourne, Kent ME10 4QS, England.

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As described above, the Lemon-breasted Canary *Serinus citrinipectus*, has been bred by Tony Jolliffe. This is probably the first successful breeding of this species in Great Britain or Ireland. Anyone who knows of a previous breeding is asked to inform the Hon. Secretary.

AVICULTURAL MAGAZINE BACK ISSUES

A large stock is available including some early issues. Sales are by post only. Further details are available from:- Hon. Secretary, Avicultural Society, c/o Bristol Zoological Gardens, Clifton, Bristol BS8 3HA, England.

THE PROBABLE FIRST UK BREEDING OF THE MARABOU

by Malcolm Mycock

The Marabou *Leptoptilos crumeniferus*, a species very common in the wild throughout much of tropical Africa and renowned for its ugly appearance and rather unattractive feeding habits, has proven among the most difficult birds to breed.

Marabous have been exhibited at Blackbrook Zoological Park for approximately nine years, and although they are not the most attractive of birds, visitors find them fascinating. After numerous setbacks and a lot of hard work we hatched and reared Marabous here last year (1999). It was, we believe, the first breeding of this species in the UK and one of only a handful of successes worldwide. Although Marabous have been kept in captivity for a great many years and egg laying is not uncommon, fertile eggs are rare.

We had a partial success with our Marabous three years ago, when they hatched but failed to rear a chick, which was seen and heard but went missing at only three days old having, we presumed, been eaten by one or both of its parents. Last year seven eggs were laid and as we did not want to risk losing them, it was decided to take them from the parents and attempt to hatch and rear the chicks ourselves. The first four eggs were placed under broody hens but this, unfortunately proved unsuccessful. One of the four eggs was fertile but failed to hatch, due it seemed to too much humidity. So, somewhat nervously, we decided to attempt to incubate the other eggs in an incubator set at 37°C (98.6°F) with a relative humidity of 35%-40%.

One morning during my inspection of the eggs in the incubator room, sounds were heard coming from two Marabou eggs. Luckily it was very early in the morning and no one else was present to hear my shouts of excitement and see me jumping around like a lunatic in the hatchery. Both eggs hatched after incubation periods of 32 days and the long and worrying task of rearing the chicks began.

They were fed on a diet of spratts and boned and skinned day-old chicks that were very finely chopped, and with the addition of zoovite vitamin supplement and warm water, offered to the birds in the form of a thick soup in a shallow dish. Neither were fed for the first 24 hours, after which both fed themselves from the start. The amount of food given to each chick per feed was no more than 10% of its body weight. After the second day of feeding themselves, mice pinkies were added to the diet along with a calcium supplement. Both chicks were fed six times a day, the first feed being given at 6.00am and the last at midnight. The diet remained the same as the chicks

*J. Rogerson***Adult Marabous***J. Rogerson***Aged four days**

grew older, except that larger pieces of food were provided, in warm water still. Also, as the chicks grew older and bigger the number of feeds per day was decreased.



J. Rogerson

Three months old

I am pleased to report that both chicks were reared to independence. Unfortunately, however, M1, the older of the two by 24 hours, ruptured a tendon in one of its legs. The leg was operated upon and the tendon repaired successfully, but a number of weeks standing on the injured leg proved too much for the bird and eventually it was put to sleep.

The second young Marabou, M2, developed normally without any problems and is the same size as her parents now and is on show at Blackbrook Zoological Park.

An egg laid this year proved to be infertile.

As described above the Marabou *Leptoptilos crumeniferus*, has been bred at Blackbrook Zoological Park. This is probably the first successful breeding of this species in Great Britain or Ireland. Anyone who knows of a previous breeding is asked to inform the Hon. Secretary.

Malcolm Mycock is Manager of Blackbrook Zoological Park, Winkhill, Nr. Leek, Staffordshire ST13 7QR, England. The zoo which occupies a 70 acre (28.3 hectares) site was founded in 1991 by its owner Diana Holloway, an Avicultural Society Council Member.

NEWS & VIEWS

FIRST BREEDING

Neville Brickell, co-author with Trevor Konigkramer of Further Notes on the Drakensberg Siskin *Serinus totta symonsi* (*Avicultural Magazine* 106,3:118-121), has written to say that Trevor has finally succeeded in breeding this species. One youngster left the nest after 19 days. It is the first breeding in captivity of the Drakensberg Siskin and in recognition of this, Trevor, a member of the Natal Bird Breeder's Society, has been awarded that society's diploma. At the time of writing (October 10th), the female was sitting again, this time on three eggs.

* * *

NEW DIRECTOR

Simon Tonge, formerly Senior Curator at London Zoo, is the now Director of Paignton Zoo, Devon, replacing Peter Stevens who has retired. Simon Tonge joined London Zoo from Jersey Zoo in 1993, and for a time served as an Avicultural Society Council Member. Curatorial responsibility for both the London Zoo and Whipsnade collections is now in the hands of Nick Lindsay, who wrote recently about The New Penguin Development at Whipsnade (*Avicultural Magazine*, Vol.106, No.2, pp.85-86) and earlier about Flamingos at Whipsnade (*Avicultural Magazine*, Vol.104, No.3, pp.100-101).

* * *

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* * *

BIRDING CONFERENCE

The second World Birding Conference - website: www.wbc2.com is to be held March 30th - April 1st 2001, at The Hayes Conference Centre, Swanwick, Derbyshire, England. Further details are available from:- Sue Starling, World Bird Conference, c/o BTO, The Nunnery, Thetford, Norfolk IP24 2PU, England. Tel:01842 750050/Fax:01842 750030/E-mail: sue.starling@bto.org.

* * *

EXOTICS QUEST 2000

Organised by Adrian Fowler of the University of Bristol School of Veterinary Science at Langford, Exotics Quest 2000 was a great success. Almost 200 fourth and fifth year students, a high percentage of them female, attended on what was a cold day in late spring. The society had a stand there and in the information pack given to each student and stand holder was a copy of the *Avicultural Magazine* and a membership form.

Avicultural Society Council Member Laura Gardner was one of the speakers and brought with her a pair of Bali Starlings *Leucopsar rothschildi*. The Tropical Bird Gardens, at Rode, provided a selection of birds including a Triangular Spotted Pigeon *Columba guinea*, Grey Hornbill *Tockus nasutus* and a Green-crested Touraco *Tauraco persa*. Shirley Lawton, a member from Northamptonshire, showed a selection of parrots she was rearing including Triton *Cacatua galerita triton* and Goffin's Cockatoos *C. goffini*, Blue & Gold Macaws *Ara ararauna*, African Greys *Psittacus erithacus* and Black-headed Caiques *Pionites melanoleuca*. There was a display by the Rhea and Emu Association and a Toco Toucan *Ramphastos toco* in wonderful condition belonging to Adrian Fowler. Also present was Mike Downman, formerly a keeper at Rode, who is now working with primates at Howletts Zoo.

The day concluded with an excellent film show and talk by Mike Salisbury of the BBC Natural History Unit based in Bristol. Mike was the producer of Sir David Attenborough's *Life of Birds* TV series.

Hopefully, it was a good PR exercise for the Society and some of the students may eventually become members.

* * *

UNUSUAL HAPPENINGS

The Violet-backed Starling *Cinnyricinclus leucogaster* is a surprise inclusion in The European Bird Report (a '...continent-wide report on population trends and significant, nationally accepted records of rarities') in *British Birds* 93,9:428-433 (September 2000). It is on account of the first record of this species in Israel, at Eilat from July 5th - August 14th, back in 1983. The same report includes the first and second breeding records of the (Indian) House Crow *Corvus splendens* in the Netherlands in 1997 and 1998.

The section on non-native birds breeding in the UK in 1998, includes two pairs of Alexandrine Parrakeets *Psittacula eupatria* which nested at Fazackerly, Merseyside, and raised broods of five and three young. All 12 were seen together later, but sometime afterwards several were shot by youths with airguns. At least one pair though are known to have survived through the following winter. Malcolm Ogilvie and the Rare Breeding Birds Panel noted: 'While we must condemn the vandalism, we also do not wish another member of the parrot family to become established as a breeding species in Britain.'

OBITUARY

KENNETH JAMES LAWRENCE

The sudden death of the Society's Chairman Ken Lawrence came as a great shock. He died on November 1st, when travelling home from the office of the weekly magazine *Cage & Aviary Birds*, where he had been busy working on the arrangements for the National Exhibition of Cage & Aviary Birds.

When Ken and his wife Jean married in 1953, he began keeping foreign birds and had continued to do so ever since. In those early days he kept a fine array of lorries, lorikeets and small seedeaters. Many rare birds came into his possession, among them South African and South American species he acquired from sailors when their ships docked at Harwich. These included an Orange Cock of the Rock, a Naked-throated Bellbird, Orange-breasted Sunbirds, Dufresne's Waxbills and various hummingbirds. Later Ken specialised in starlings - he was particularly fond of Spreos - and bred a number of different species. He also kept a small stud of Zebra Finches.

As well as keeping, breeding, exhibiting and judging foreign birds, Ken was a tireless worker and administrator. He joined the Avicultural Society in 1955. He was elected a Council Member in 1970 and on the retirement of Prof. Hodges was elected Chairman. Ken also arranged the social events; and if the collection we were to visit lacked suitable catering facilities, often would visit the nearest town or village in advance and find a nice pub in which we could hold our Council Meeting and in which members and their guests invariably enjoyed a splendid lunch at a reasonable price, before setting off to view the birds.

Ken also joined the Foreign Bird League in the early 1950s and was elected onto its Council some 10 years later. He became its first Chairman in 1968, a post he retired from 20 years later, upon which he was made an Honorary Life Member. In 1980 Ken was a joint winner of the League's Herbert Wragg Memorial Shield, an annual award for meritorious breedings.

A number of prominent foreign bird enthusiasts in the London area became acquainted with Ken following the formation of the Southern Foreign Bird Club in 1961. Two years later he was elected Chairman, a position he held for the next 25 years. Ken also served on the committee of the National Council for Aviculture (NCA), and served as Chairman of that organisation too.

Our sincere condolences are extended to his wife Jean, his daughters Jane and Nicola, and his three grand-daughters.

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IN THE PINK

In 1997, the Wildlife Conservation Society (WCS), of New York, spearheaded the first comprehensive censuses of Andean and James' Flamingos *Phoenicoparrus andinus* and *P. jamesi*. Two censuses in the summers of 1997 and 1998, and three in the winters of 1997, 1998 and 2000, simultaneously in Argentina, Bolivia, Chile and Peru, recorded at least 34,000 Andean and 64,000 James'. Other census results, reported in *Wildlife Conservation*, Vol.103, No.6, November-December 2000, put the total population of Caribbean Flamingos *Phoenicopterus ruber ruber* at just over 270,000, 40,000 in the Bahamas, 17,000 in Venezuela, 180,000 in Cuba and 34,000 on Mexico's Yucatán Peninsula.

* * *

NEW DIRECTOR

American, James (Jamie) D. Gilardi PhD, one of the four editors and an author of the Parrot Action Plan reviewed recently in the *Avicultural Magazine* (Vol.106, No.3, pp.130-133), is the new Director of the World Parrot Trust. Mike Reynolds has taken on the role of Chairman.

* * *

SENTENCE REDUCED

Harry Sissen had his appeal against his conviction for illegally importing into the UK three Lear's Macaws *Anodorhynchus leari* and six Blue-headed Macaws *Ara couloni* (see News & Views, Vol.106, No.2, p.90 & Vol.106, No.3, p.136) dismissed at the Court of Appeal in London, but his sentence was reduced from two and a half years to one and a half years and he became eligible for parole at Christmas.

It has been reported that a further 13 of the seized birds have died. They are: two Red-vented Cockatoos *Cacatua haematuropygia*, a Thick-billed Parrot *Rhynchopsittia pachyrhyncha*, four Hyacinth Macaws *A. hyacinthinus*, two Red-fronted Macaws *A. rubrogenys*, two Buffon's Macaws *A. ambigua*, a Blue-throated Macaw *A. glaucogularis* and a Scarlet Macaw *A. macao*.



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